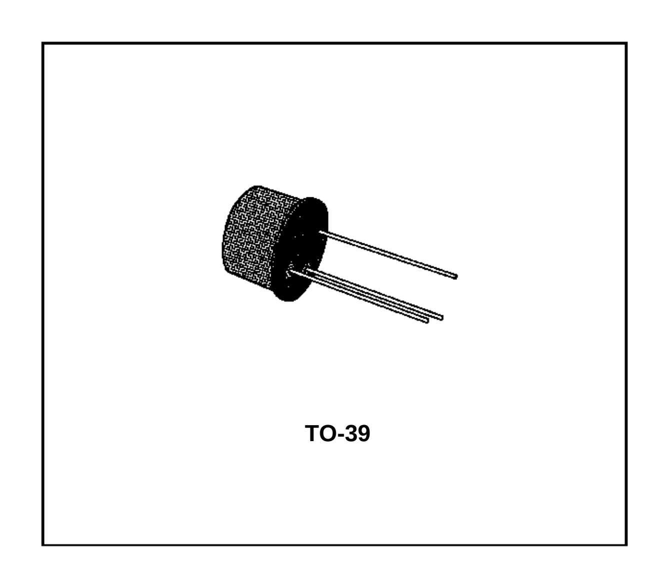
SGS-THOMSON MICROELECTRONICS

BC160
BC161

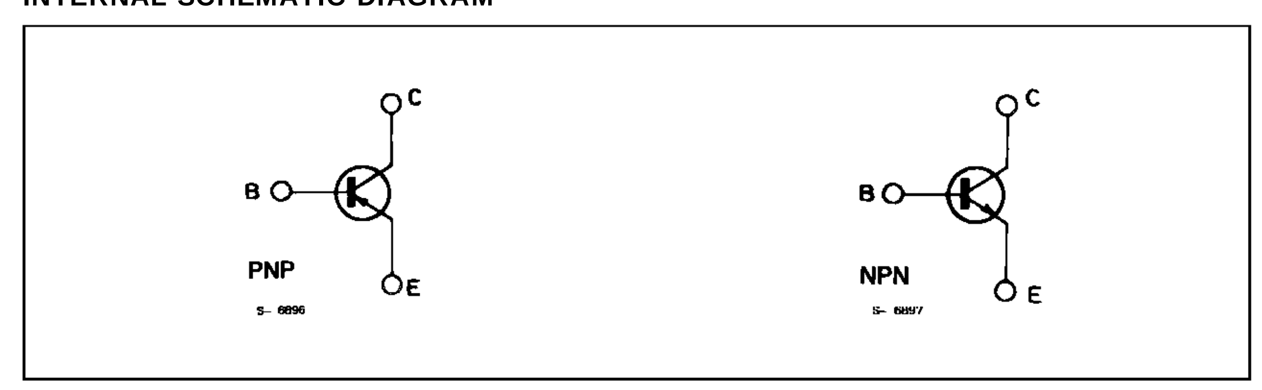
GENERAL PURPOSE TRANSISTORS

DESCRIPTION

The BC160, and BC161 are silicon planar epitaxial PNP transistors in TO-39 metal case. They are particularly designed for audio amplifiers and switching applications up to 1A. The complementary NPN types are the BC140 and BC141.


TO-39

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BC160	BC161	
V_{CBO}	Collector-base Voltage (I_E = 0)	– 40	– 60	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	– 40	– 60	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	– 5		V
I_C	Collector Current	– 1		A
I_B	Base Current	– 0.1		A
P_{tot}	Total Power Dissipation at $T_{amb} \leq 45$ °C at $T_{case} \leq 45$ °C	0.65 3.7		W W
T_{stg}	Storage Temperature	– 55 to 175		°C
T_j	Junction Temperature	175		°C

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	35	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	200	°C/W

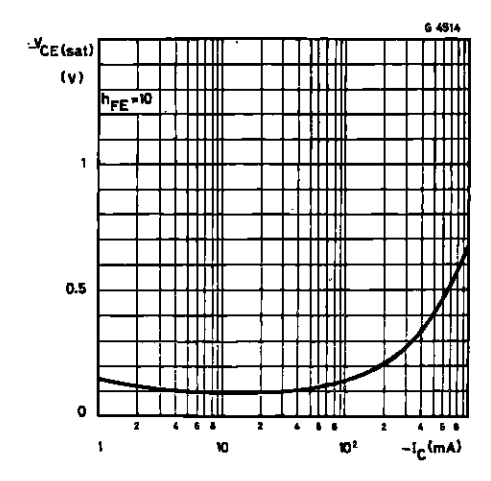
ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (I_E = 0)	V_{CES} = 40 V for **BC160** V_{CES} = 60 V for **BC161** V_{CES} = 40 V for **BC160** T_{amb} = 150 °C V_{CES} = 60 V for **BC161** T_{amb} = 150 °C			– 100 – 100 – 100 – 100	nA nA µA µA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = – 100 µA for **BC160** for **BC161**	 – 40 – 60			 V V
$V_{(BR)CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = – 10 mA for **BC160** for **BC161**	 – 40 – 60			 V V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = – 100 µA	– 5			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = – 0.1 A I_B = – 10 mA I_C = – 0.5 A I_B = – 50 mA I_C = – 1 A I_B = – 0.1 A		– 0.1 – 0.35 – 0.6	 – 1	V V V
V_{BE}*	Base-emitter Voltage	I_C = – 1 A V_{CE} = – 1 V		– 1	– 1.7	V
h_{FE}*	DC Current Gain	I_C = – 100 µA V_{CE} = – 1 V for **BC160-161** for **BC160-161** Gr. 6 for **BC160-161** Gr. 10 for **BC160-161** Gr. 16 I_C = – 100 mA V_{CE} = – 1 V for **BC160-161** for **BC160-161** Gr. 6 for **BC160-161** Gr. 10 for **BC160-161** Gr. 16	 40 40 63 100	 110 46 80 120 140 63 100 160	 250 100 160 250	
h_{FE}*	DC Current Gain	I_C = – 1 A V_{CE} = – 1 V for **BC160-161** for **BC160-161** Gr. 6 for **BC160-161** Gr. 10 for **BC160-161** Gr. 16		 26 15 20 30		
f_T	Transition Frequency	I_C = – 50 mA V_{CE} = – 10 V	50			MHz
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = – 20 V f = 1 MHz		15	30	pF
C_{EBO}	Emitter-base Capacitance	V_{EB} = – 0.5 V f = 1 MHz			180	pF
t_{on}	Turn-on Time	I_C = – 100 mA I_{B1} = – 5 mA			500	ns
t_{off}	Turn-off Time	I_C = – 100 mA I_{B1} = I_{B2} = – 5mA			650	ns

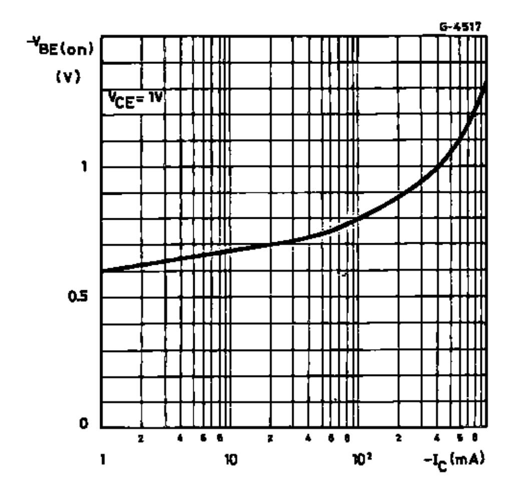
* Pulsed : pulse duration = 300 µs, duty cycle = 1 %.



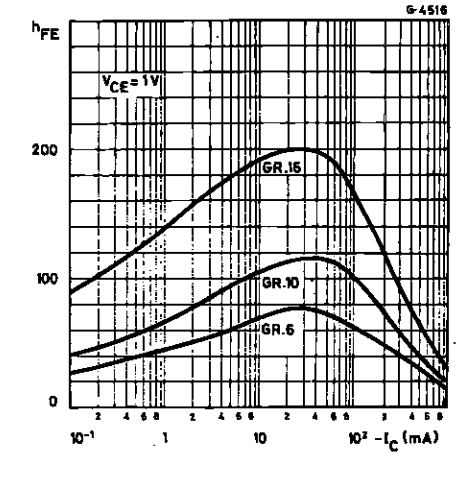
Collector-emitter Saturation Voltage.



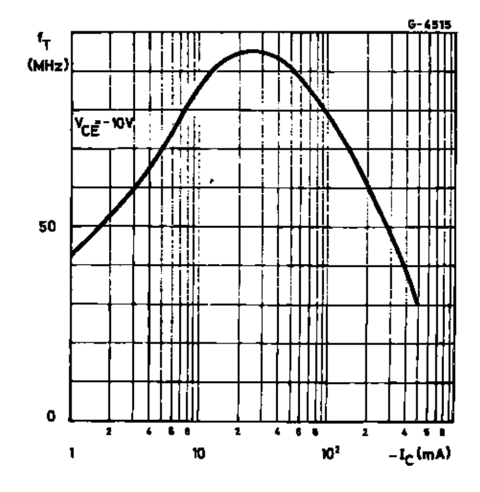
Base-emitter Voltage.



DC Current Gain.

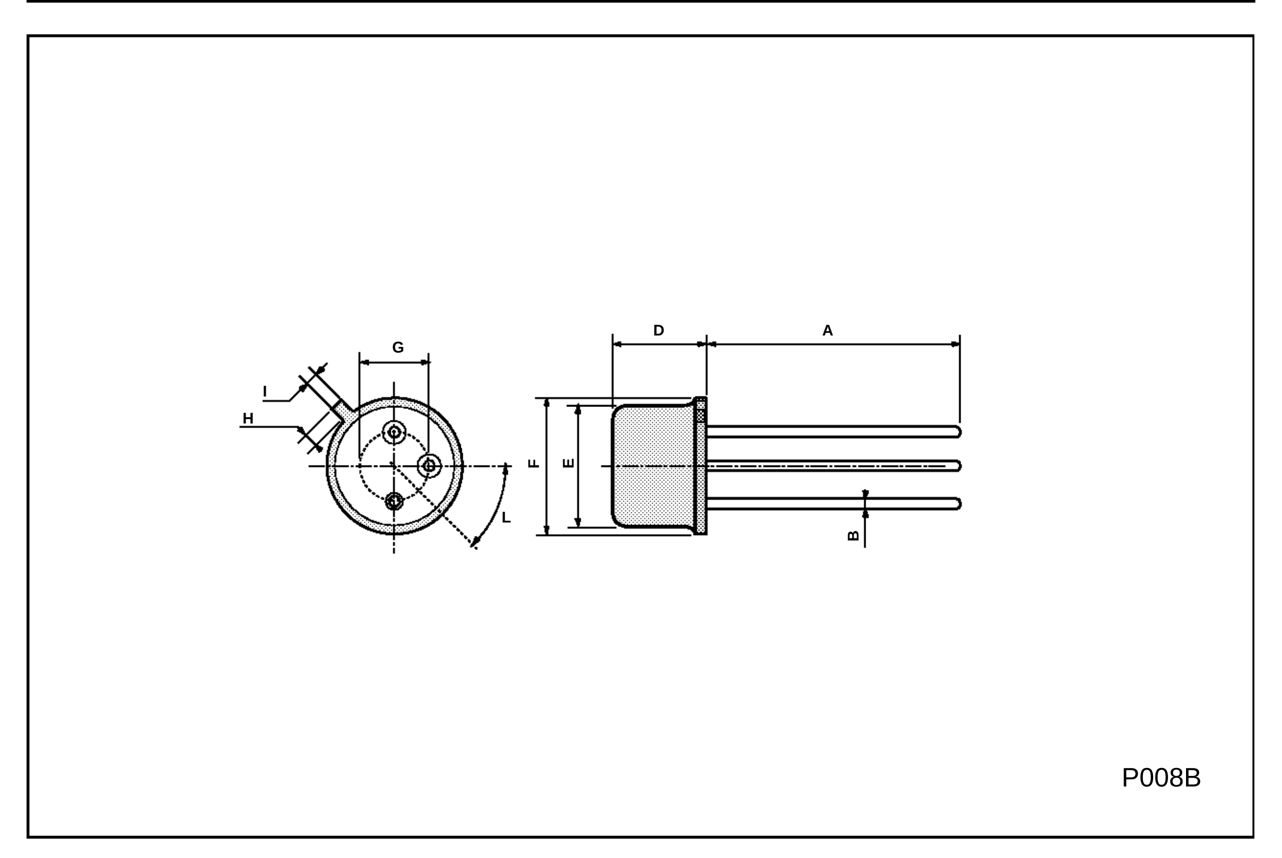


Transition Frequency.



TO39 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	12.7			0.500		
B			0.49			0.019
D			6.6			0.260
E			8.5			0.334
F			9.4			0.370
G	5.08			0.200		
H			1.2			0.047
I			0.9			0.035
L	45^{o} (typ.)					



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